

What is claimed is:

1. A high-pressure processing apparatus for subjecting a surface of a process subject to a predetermined surface treatment by allowing a process fluid comprising a high-pressure fluid or a mixture of the high-pressure fluid and at least one chemical agent to contact the surface of said process subject, said apparatus comprising:

a pressure vessel including a processing chamber defined therein for performing said surface treatment;

high-pressure fluid supply means for supplying said high-pressure fluid to said processing chamber; and

chemical-agent supply means which prepares a chemical formulation by blending together all or selected one(s) of plural chemical agents and then, as required, pumps the chemical formulation into the high-pressure fluid pumped from said high-pressure fluid supply means to said processing chamber or pumps the chemical formulation directly to said processing chamber.

2. A high-pressure processing apparatus as claimed in Claim 1, wherein said plural chemical agents are stored in dedicated tanks, respectively, and

wherein said chemical-agent supply means includes: blending means for blending the chemical agents; a plurality of flow-rate control means each provided in correspondence to a respective one of said

dedicated tanks; and pumping means for pumping said chemical formulation blended by said blending means, and adjusts blending proportions of the individual chemical agents in said chemical formulation by way of said plural flow-rate control means individually controlling the respective flow rates of said plural chemical agents supplied to said blending means.

3. A high-pressure processing apparatus as claimed in Claim 2, wherein said plural flow-rate control means each perform a feedback control for controlling the flow rate of the chemical agent supplied to said blending means.

4. A high-pressure processing apparatus as claimed in Claim 2, wherein a first surface treatment and a second surface treatment are performed in this order, as said surface treatment, said first surface treatment being a treatment in which said chemical formulation is prepared by blending one of said plural chemical agents, as a first chemical agent, with at least one of the chemical agents other than said first chemical agent and which is performed on the surface of said process subject using a process fluid comprising a mixture of the chemical formulation and said high-pressure fluid, said second surface treatment being a treatment which is different from said first surface treatment and which is performed on the surface of said process subject using a process fluid comprising a mixture of said chemical formulation and said high-pressure fluid, the chemical

formulation including said first chemical agent alone, and

wherein said blending means includes: a primary flow path for guiding said first chemical agent to said pumping means; and auxiliary flow paths each provided in correspondence to a respective one of said plural chemical agents other than said first chemical agent and guiding the chemical agent to said primary flow path.

5. A high-pressure processing apparatus as claimed in Claim 2, wherein said blending means is a mixing valve assembly.

6. A high-pressure processing apparatus as claimed in Claim 2, wherein at least one of said plural chemical agents is defined as a chemical agent to be replenished,

said apparatus further comprising replenishment means for replenishing said tank with said chemical agent to be replenished, the tank storing therein said chemical agent to be replenished.

7. A high-pressure processing apparatus for subjecting a surface of a process subject to a predetermined surface treatment by allowing a process fluid comprising a high-pressure fluid or a mixture of the high-pressure fluid and a chemical agent to contact the surface of said process subject, said apparatus comprising:

a plurality of pressure vessels each including a processing chamber defined therein for performing said surface treatment;

high-pressure fluid supply means for supplying said high-pressure fluid to said plural processing chambers;

a plurality of common tanks individually storing therein a respective one of plural chemical agents; and

a plurality of chemical-agent supply means which are each provided in correspondence to a respective one of said plural processing chambers, and which each prepares a chemical formulation for the corresponding processing chamber by blending all or selected one(s) of said plural chemical agents supplied from said plural common tanks and then, as required, pumps the chemical formulation into the high-pressure fluid pumped from said high-pressure supply means to the processing chamber or pumps the chemical formulation directly to the processing chamber.

8. A high-pressure processing apparatus as claimed in Claim 7, wherein said plural chemical-agent supply means each include: blending means for blending the chemical agents; a plurality of flow-rate control means each provided in correspondence to a respective one of said plural common tanks; and pumping means for pumping said chemical formulation blended by said blending means, and each adjust blending proportions of the individual chemical agents in said chemical formulation by way of said plural flow-rate control means individually controlling the respective flow rates of said plural chemical agents supplied to said blending means.

9. A high-pressure processing apparatus as claimed in Claim 8, wherein said plural flow-rate control means each perform a feedback control for controlling the flow rate of the chemical agent supplied to said blending means.

10. A high-pressure processing apparatus as claimed in Claim 8, wherein a first surface treatment and a second surface treatment are performed in this order, as said surface treatment, said first surface treatment being a treatment in which said chemical formulation is prepared by blending one of said plural chemical agents, as a first chemical agent, with at least one of the chemical agents other than said first chemical agent and which is performed on the surface of said process subject using a process fluid comprising a mixture of the chemical formulation and said high-pressure fluid, said second surface treatment being a treatment which is different from said first surface treatment and which is performed on the surface of said process subject using a process fluid comprising a mixture of said chemical formulation and said high-pressure fluid, the chemical formulation including said first chemical agent alone, and

wherein said blending means includes: a primary flow path for guiding said first chemical agent to said pumping means; and auxiliary flow paths each provided in correspondence to a respective one of said plural chemical agents other than said first chemical agent and guiding the chemical agent to said primary flow path.

11. A high-pressure processing apparatus as claimed in Claim 8, wherein said blending means is a mixing valve assembly.

12. A high-pressure processing apparatus as claimed in Claim 8, wherein at least one of said plural chemical agents is defined as a chemical agent to be replenished,

said apparatus further comprising replenishment means for replenishing said tank with said chemical agent to be replenished, the tank storing therein said chemical agent to be replenished.

13. A high-pressure processing method for subjecting a surface of a process subject to a predetermined surface treatment by allowing a process fluid comprising a mixture of a high-pressure fluid and plural chemical agents to contact the surface of said process subject, the method comprising the steps of:

pumping said high-pressure fluid to a processing chamber accommodating therein said process subject;

preparing a chemical formulation by blending together said plural chemical agents and then pumping the chemical formulation to said processing chamber; and

forming said process fluid by mixing said high-pressure fluid with said chemical formulation at place upstream from said processing chamber and then supplying the process fluid to said processing chamber.

14. A high-pressure processing method for subjecting a surface of a process subject to a predetermined surface treatment by allowing a process fluid comprising a mixture of a high-pressure fluid and plural chemical agents to contact the surface of said process subject, the method comprising the steps of:

pumping said high-pressure fluid to a processing chamber accommodating therein said process subject;

preparing a chemical formulation by blending together said plural chemical agents and then pumping the chemical formulation to said processing chamber; and

forming said process fluid by mixing said high-pressure fluid with said chemical formulation in said processing chamber.